



Information Science and Technology Center Seminar



Hans-Joachim Ziock
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"Information, A New Approach"

Wednesday, March 10, 2010

3:00 - 4:30 PM

TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: In examining definitions of information, essentially all are found to be circular in nature and fail to address the issue of how information originates. To address these issues, a new definition of information based on selection is proposed. By requiring information to be "long-lived," noting that information is NOT a thermodynamic equilibrium state, and taking into account the Second Law of Thermodynamics, a somewhat surprising underlying selection criterion emerges. From this, the parallel nature of life and information becomes immediately obvious. How information initially originated also becomes clear. The definition and its consequences are further expanded on.

Biography: Reflecting his diverse interests, Dr. Ziock's career covers a wide range of topics, in all of which he has made important contributions. His thesis was in the field of intermediate-energy physics. After joining Los Alamos National Laboratory (LANL) in the intermediate-energy physics group, Dr. Ziock began working in the field of elementary particle physics, and became the lead LANL scientist investigating radiation tolerant solid state detectors during which he discovered the ability of low temperatures to significantly increase the radiation tolerance and lifetime of these detectors. He was the chief LANL scientist for the high-energy physics Solenoid Detector Collaboration for the Superconducting Super Collider project and then the Large Hadron Collider project. This effort involved working closely with a mechanical engineering group and covered a diverse range of specialties including ultra-stable carbon composite structures, a heat pipe/evaporative cooling system development, and real-time television-based holography. Thereafter, he led the development of an extremely high speed imaging detector system (5 million frames per second) for a proton based radiography program. During this period, Dr. Ziock also became interested in the global issue of carbon management. Dr. Ziock organized and led the Cradle to Grave Carbon Management R&D and Zero Emission Coal programs at LANL. He is a co-inventor of the LANL Zero Emission Coal Technology. He has been the principal investigator at LANL for the CO₂ Mineral Sequestration effort, which involves the permanent disposal of CO₂ in solid mineral form and more recently helped develop the concept of directly extracting CO₂ from the atmosphere. He continues to pursue efforts in carbon management, helping to lead efforts at Los Alamos for a program looking at Energy Systems, Planetary Management, and Social Impact: Laying the Foundations for a Global Framework. In parallel, he has most recently been one of the lead scientists on the Protocell Assembly project whose goal has been to produce an artificial self-replicating nanoscale system, where he has been examining the broader issues of information and self-regulation.



Contact the technical host Garrett Kenyon, gkenyon@lanl.gov, 667-1900 or Frank Alexander, fja@lanl.gov, 665-4518 for further information.
—Hosted by the Information Science and Technology Center (ISTC)—